What drives the European islamic market: is it the conventional market or the other islamic markets ?

Touati, Fatima and Masih, Mansur

INCEIF, Malaysia, Business School, Universiti Kuala Lumpur, Kuala Lumpur, Malaysia

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What drives the European islamic market: is it the conventional market or the other islamic markets ?

Fatima Touati [1] and Mansur Masih[2]

Abstract

The objective of this research is to identify the influences between Islamic index in Europe, and its counterpart in Asia, whether the requirement of Shariah (Islamic) compliance of Islamic indexes will tend to get the indexes closer by being influential on each other, or other indexes such as, the conventional regional index and/or conventional interest rate such as LIBOR, will have more influence on the European Islamic index. To answer this question, we applied our study to the following indexes, European Islamic, Asian Islamic, Europe conventional, US conventional, and LIBOR. The standard time series techniques have been employed for the analysis. Our findings tend to indicate that European Islamic index will be influenced more by the movements in LIBOR and conventional markets, rather than the other Islamic indexes. For the policy makers and investors, our results are useful to predict movements of European Islamic index.

Keywords: European Islamic market, conventional market, LIBOR

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[1] INCEIF, Lorong Universiti A, 59100 Kuala Lumpur, Malaysia.

2 **Corresponding author**, Senior Professor, UniKL Business School, 50300, Kuala Lumpur, Malaysia.

Email: mansurmasih@unikl.edu.my

INTRODUCTION: OBJECTIVE AND MOTIVATION OF THE RESEARCH

The objective of this research is to identify the influences between Islamic index in Europe, and its counterpart in Asia, whether the requirement of Shariah (Islamic) compliance of Islamic indexes will tend to get the indexes closer by being influential on each other, or other indexes, such as the conventional regional index and LIBOR, will have more influence on the European Islamic index. To answer this question, we applied our study on the following indexes, European Islamic, Asian Islamic, Europe conventional, US conventional, and LIBOR.

The finding of this research will be particularly interesting for investors to forecast movements on markets, and to determine the causality effect between the indexes. It also allows understanding the intrinsic features of Islamic index.

Indeed, we are tempted to assume that as Islamic indexes are subject to Shariah requirements and compliance, and as Asia is the most active area in Islamic finance, movements in indexes such as European Islamic index will be highly influenced by Asian Islamic index.

But on the other hand, we can also consider that, as European Islamic financial market is at its very beginning stage, and not very expanded yet, the conventional regional movements of stocks or LIBOR will have a greater influence on the movement of the index, Islamic or not.

Besides, we also evaluate the importance of US conventional index, as a leading index in the international market, to evaluate the impact of such index on European Islamic index.

1. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

It was unfortunately impossible to find a large literature review on that specific topic. But there are some studies more generally on the implications and relationship of indexes

performance. The idea that indexes over the world are "connected" in that the performance of one index bears influence on the others is an intuitively appealing one. A paper from Albaity and Ahmad (2008) focuses on the performance of the Kuala Lumpur Shariah Index (KLSI) and the Kuala Lumpur Composite index (KLCI). While analyzing the performance, the authors employed the causality and Johansen cointegration tests to examine the short and long run relationships between the two indexes. Their results show a divergence in the short run relationship, but it seems that in the long run, the two indices are moving together.

However, this study is based on purely local indices, but do not allow us to generalize the result at an international level. This is the research gap that this study seeks to address.

The research here is purposely focusing on European Islamic index, as it is the lagging one in the Islamic financial industry. Shariah compliant products and companies are very limited there, and opportunities of investment similarly. These market conditions would suggest that other Shariah compliant indexes would highly affect the performance of the European Islamic index. Moreover, the development of European Islamic finance industry being dragged by the development of other regions' products will tend to tell us that European Islamic index plays a secondary market for Islamic financial products. As such, one can suppose that European Islamic financial market is just repeating what is happening in similar markets with a time lag period. If this assumption is true, it would tell investors where to look when they wish to invest in Islamic products in Europe. The limitation of such assumption is that, as we said previously, Islamic finance in Europe is just a niche, not really a market yet. Thus, its influences can come from more developed and active Islamic regions, but it can also come from a more regional and influential index. That is why, looking at the movement of European conventional index and LIBOR will tell us more specifically whether the Shariah compliance and requirement is the leading component in the European Islamic index or more generally the regional actor.

The assumption that conventional markets will tend to have a higher effect on Islamic indexes made us choose the US conventional index as well in our study.

2. Research Methodology, Results and Interpretation

The method used to conduct this study is time series approach, in order to find empirical evidence of the nature of relations between Islamic and conventional indexes as alluded to in the introductory paragraphs. This method seems to be the more appropriate and accurate one for the study we are willing to do.

Data used is a daily data starting from 06/2008 covering the 5 indices previously quoted.

2.1. Testing Stationarity of Variables

In this part, we will test if the variables are stationary or non-stationary. Indeed, to apply co-integration on later stage, we need to find our variables to be non-stationary. To do so, we use the ADF test. This test allows us to define this feature from each variable. Even if ADF test does not take care of the heteroskedasticity in the equation, we can still apply it, as there is no heteroskedasticity in time series.
To apply ADF test, we need to take the differenced variables as well. Our objective here is o find the variables non-stationary and their differenced one stationary. Results are showed in the following table:

Variables in Level form	**Test Statistic**	**Critical Value**	**Implications, the variable is:**
IS_ASIA	-1.4960	-2.8655	Non-stationary

IS_EURO	-1.8483	-2.8655	Non-stationary
C_EURO	-2.1500	-2.8655	Non-stationary
C_US	-1.5639	-2.8655	Non-stationary
LIBOR	-2.7609	-2.8655	Non-stationary

Variables in differenced form	**Test Statistic**	**Critical Value**	**Implications, the variable is:**
DIS_ASIA	-19.2810	-2.8655	Stationary
DIS_EURO	-21.5070	-2.8655	Stationary
DC_EURO	-21.1246	-2.8655	Stationary
DC_US	-23.8540	-2.8655	Stationary
DLIBOR	-12.0802	-2.8655	Stationary

Where:

- IS_ASIA is the Asian Islamic index
- IS_EURO is the European Islamic index
- C_EURO is the European conventional index
- C_US is the US conventional index
- D their differenced form

2.2. Determination of Order of the VAR Model

After determining the stationarity of our variables, we need to proceed to the next step, which is the determination of the order of the VAR. In other words, we are trying to determine the optimum number of lags for the equation.

To do so, we will use AIC and SBC methods, which both give optimum number of lags, except that AIC maximizes it while SBC minimizes it.

Following are the results:

	AIC	**SBC**
Optimum number of lag	5	2

To solve this conflict between AIC results and SBC results, we have to look at the data we have used. As our data for this study is a daily data and is not long, we will use the AIC optimum number of lag for our research, so 5.

2.3. TESTING CO-INTEGRATION :

The previous steps served to determine the stationarity or not of our variables, and the optimum VAR order. Now that we have clarified that all our variables are non-stationary and that the optimum VAR order is 5, we can test the co-integration.

In this step, we are testing the co-integration of the variables by looking at the results of Eigen value test, and trace test. Co-integrations will indicate us if the variables are moving together in the long run.

Null	**Alternative**	**Statistic**	**95% Critical Value**	**90%Critical Value**
r = 0	r = 1	41.2247	37.8600	35.0400
r<= 1	r = 2	19.9664	31.7900	29.1300

Testing the co-integration is a test that allows us to see the relationship between the variables in the long run. In the results showed above, we can see that for r=0, the statistical value is higher than both critical values, at 95% and 90% confidence intervals. As such, we can reject the null hypothesis that is, there is no co-integration.
In the second case, when r=1, the statistical value is lower than the critical value. We can then accept the alternative of the null hypothesis, which is in that case, that there is one co-integration. Results found above are confirmed by the Eigen value test:

Eigen value test:

Null	Alternative	Statistic	95% Critical Value	90%Critical Value
r = 0	r>= 1	98.0759	87.1700	82.8800
r<= 1	r>= 2	56.8512	63.0000	59.1600

The results found through Microfit are in line with our expectations. Indeed, it is clear that markets impact on each others around the world. The impact can be small or large, but they are all affected in a way or another from the other markets. As indices reflex the market movements in general, we can then apply the same principle on the indices we are studying in this case.

2.4. LONG RUN STRUCTURING MODEL :

At this stage, we are willing to understand how the variables are moving together in the long run. Indeed, testing the co-integration, did only tell us whether or not the variables

are co-integrated. We know now that our variables are co-integrated, so moving together in the long run. However, it is important to keep the theory in our research. This is what we are aiming to do in the Long Run Structuring Model. We are now testing our theory on the results we previously got. This step allows use to establish the fact that our results are not only scientific, but also supporting and supported by a theory.

Variables	Vector 1	Chi-square P-value	Implications
IS_EURO	1.0000 (*NONE*)	NONE	
IS_ASIA	.24610 (.17963)	1,3700	Insignifiant
C_EURO	-1.3381 (.62848)	-2,1291	Significant
C_US	-.68980 (.30354)	-2,2725	Significant
LIBOR	77.6490 (32.7446)	2,3714	Significant
Trend	.15586 (.14166)	NONE	

We have run the LRSM test with the restriction a1=1, or IS_EURO=1, as our main objective is to evaluate the impact of conventional and Islamic indexes on an Islamic index that is at the very beginning stage of development. We then have computed the chi-square p-value of our variables, to test whether our variables are significant or not. In the whole set of variable used for this study, 4 have been considered as significant, while the IS_ASIA is considered non-significant.

The results suggest to us that switching off the IS_ASIA variable will not affect our equation. That is what we are testing in the over identification step.

Variables	Vector 1	Vector 2
IS_EURO	1.0000 (*NONE*)	1.0000 (*NONE*)
IS_ASIA	.24610 (.17963)	0.00 (*NONE*)
C_EURO	-1.3381 (.62848)	-.58259 (.70959)
C_US	-.68980 (.30354)	-.81478 (.43221)
LIBOR	77.6490 (32.7446)	92.1686 (49.1098)
Trend	.15586 (.14166)	.32834 (.20685)
CHSQ(1)=		1.7907[.181]

Vector 2 represents the over identification step. We have decided to test the hypothesis based on the fact that in our equation, IS_ASIA is insignificant. We found a p-value of {.181}, it means that rejecting our null hypothesis has a high probability to be wrong, or in other words, there is a high probability that our null hypothesis is right. If we don't reject our null hypothesis, we may make an error of 18.1%. We then should accept our null hypothesis, the restriction is correct. However, our topic is related to the influence of Islamic and conventional indices on Islamic indices, we then cannot drop our only Islamic index variable. Moreover, we have seen in the previous steps, that this variable is co-integrated with the rest of the variables, we decide subsequently to keep it.

2.5. VECTOR ERROR CORRECTION MODEL:

From the above results, we have realized that the following variables are significant in our equation C_EURO, C_US, and LIBOR. Even though the IS_ASIA is showed to be

insignificant, we need to keep this variable, as it is the only one in our equation that refers to Islamic index.

However, we do not know which of our variables are exogenous or endogenous. We need now to evaluate which variables are the leading ones. To find out about it, we need to test with the vector error correction model.

Co-integration tells us that in the long run, our variables are going together. The error correction term in the equation will be able to determine leading variables and following variables.

The principle in action here is that of Granger-causality, a form of temporal causality where we determine the extent to which the change in one variable is caused by another variable in a previous period.

Variable	**ECM (-1) t-ratio p-value**	**Implications**
dIS_EURO	[.049]	Endogenous
dIS_ASIA	[.118]	Exogenous
dC_EURO	[.044]	Endogenous
dC_US	[.590]	Exogenous
dLIBOR	[.000]	Endogenous

We have decided to take the rate of 10% to determine the exogeneity and endogeneity of our variables. Results show us that we have 2 leading variables, which are dIS_ASIA and dC_US.

The coefficient of e_{t-1} tells us how long it will take to get back to long-term equilibrium if that variable is shocked. The coefficient represents proportion of imbalance corrected in each period.

Typically, an investor would be interested to know which index is the exogenous variable because then the investor would closely monitor the performance of that index as it would have significant bearing on the expected movement of other indices in which the investor has invested. This exogenous index would be the index of interest to the investor.

2.6. VARIANCE DECOMPOSITION:

Vector error correction model told us which variable is endogenous, and which one is exogenous. However, we do not know exactly which one is the most leading variable. For this reason, we go through variance decomposition. This stage allows us to see how much a variable responds to its own shock. The one with the highest percentage is the most exogenous variable.

FORECAST AT HORIZON = 60 DAYS:

	IS_EURO	**IS_ASIA**	**C_EURO**	**C_US**	**LIBOR**
IS_EURO	**29,88**	9,95	30,18	28,07	1,91
IS_ASIA	19,32	**25,14**	22,26	31,89	1,39
C_EURO	27,93	9,34	**31,18**	29,92	1,63
C_US	20,57	7,10	22,95	**48,66**	0,71
LIBOR	1,21	8,45	2,07	31,45	**56,82**

The table shows us that the most leading variable in our equation is the LIBOR. It is explained by its own past at 56%. In the table, rows are the percentage of the variance of

forecast error of each variable into proportions attributable to shocks from other variables (in columns), including its own. The columns are the percentage in which that variable contributes to other variables in explaining observed changes. The diagonal line of the matrix represents the relative exogeneity.

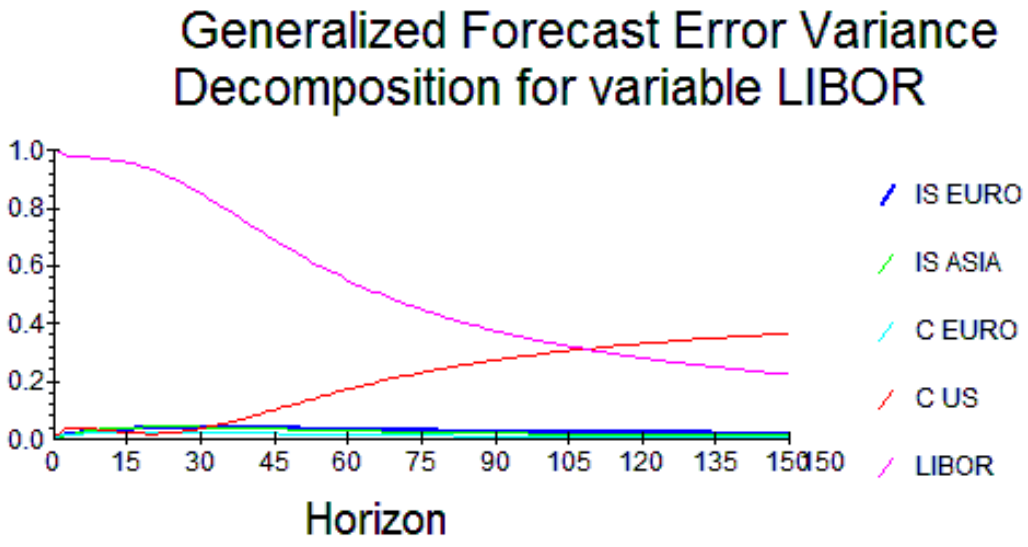
This result is quite interesting, as we have determined in the previous step, that LIBOR was the most endogenous variable. Nevertheless, the ECM step is different from VDC in the fact that VDC is a forecasted result. It is explained on a longer term than the ECM test. As such, these results are intriguing, but can be explained by the time period used.

In other words, LIBOR is the most exogenous variable, followed by, Conventional US, Conventional Europe, Islamic Europe, and finally only Islamic Asia.

2.7. Impulse Response Functions (IRF)

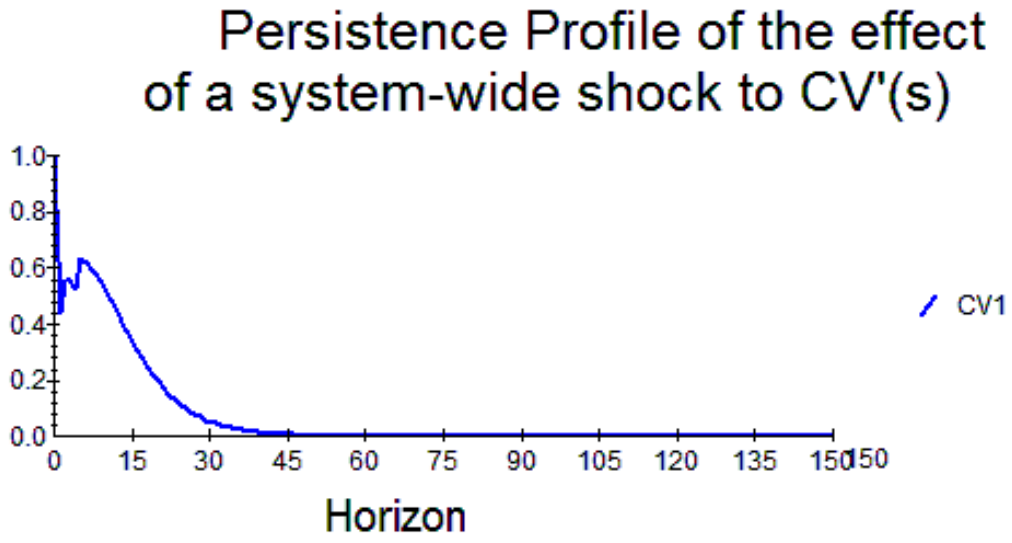
We have seen in VDC which variable is the most endogenous and the most exogenous. The IRF only shows us the results in a graphical form. It does not bring any new information to us.

Yet, the following graph is different, as it shows the movement of the variables when LIBOR is shocked. Surprisingly, C_US moves in the opposite direction to LIBOR, constantly. The two indices seem to be negatively correlated, until crossing at 110 days. Still, the other variables do not have significant movement when any of those 2 variables are shocked. We can though see how exogenous LIBOR and C_US are leading compared to the other ones. Moreover, even if they seem to have bidirectional movements, those two variables are co-integrated according to our results in previous stages.



All the other results are as expected and can be found in the appendices.

2.8. Persistence Profile



Persistence Profile shows us how long does it take to the whole system to come back to equilibrium after a shock. In the present graph, we can see that it takes around 45 days to do so. We took 150 days horizon graph because of the changes in the individual variables in the IRF. Indeed, in the previous stage, we could see that LIBOR and C_US move

together in a 60 days horizon, but diverge again to opposite directions just after this. The Persistence profile shows us that is we take into consideration the whole set of variables, it is possible to find an equilibrium at 45 days.

3. Conclusion

In our paper, we have tried to determine the relationship between Islamic index and conventional index. The idea was to find out whether Islamic indexes are linked because of their specific Islamic features, or if other indexes, conventionals, could have a deeper effect on them.

Our results tell us that actually, the variables are moving together. Players on financial markets implicitly know this. As markets are international, open to all, involving many different commodities and trades, we assume that they have impact on each other. The main reason is that what makes a financial market is more what is traded in rather than its location. Nevertheless, we cannot ignore its location. Indeed, our research was based on the European Islamic index, and we have determined through the process that LIBOR has much more effect, than Conventional US index.

If we could rank the most important features that determine how an index moves, based on the results of this study, we would say that, the most efficient market would always impact more. In our case, LIBOR is more efficient than European conventional, it is then normal to find it as more exogenous. However, US conventional is less exogenous, which tell us that LIBOR gives more impact thanks to its efficiency, but also its locality.

When running the LRSM, we have found that Islamic Asia can be switched off in our equation. We did not take into account that result based on the implications of our theory. When continuing on the exogeneity of the variable, we have found that variable

exogenous. This tells us that even though that variable has a low impact on the total equation, it still has impact on the European Islamic index.

For investors, our results are useful to predict movements of European Islamic index. It tells that European Islamic index will be influenced more by movements in LIBOR and conventional markets, rather than other Islamic indexes.

The limitations of this paper are the fact that European market as we said is just a niche, and is still developing its products and market. As a starting, it is normal to find that the index follows established indices that are more reliable. But if one day Islamic products develop in Europe the same way they are developing in Asia, like in Malaysia for instance, index may start to take their independence, and move on their own path.

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